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Dar-Ming Chiang

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EXAMINER

DESAI, ANISH P

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/791,504	<b>Applicant(s)</b> CHIANG ET AL.	
	<b>Examiner</b> ANISH DESAI	<b>Art Unit</b> 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 39-44 and 46-53 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 39-44 and 46-53 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed on 10/31/07. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/31/07 has been entered.
2. Claims 1-38 and 45 are cancelled. Claims 39-44 and 46-53 are pending.
3. The amendment to the specification submitted on 10/08/07 is entered into consideration because the amendment adds no new matter.
4. The 35 USC Section 103(a) rejections based on Chou et al. (US 2003/0054716A1) in view of Yamamoto et al. (US 4,560,737) are withdrawn in view of the present amendment and response (see page 3 of 10/31/07 amendment). None of the aforementioned references disclose "third monomer comprising cyclohexyl vinyl ether...or combinations thereof." as presently claimed.
5. The 35 USC Section 103(a) rejections based on Yamamoto et al. (US 4,560,737) in view of Chou et al. (US 2003/0054716A1) are withdrawn in view of the present amendment and response (see page 3 of 10/31/07 amendment). None of the aforementioned references disclose "third monomer comprising cyclohexyl vinyl ether...or combinations thereof." as presently claimed.
6. The 35 USC Section 103(a) rejections based on Yamamoto et al. (US 4,560,737) in view of Chou et al. (US 2003/0054716A1), and further in view of Asahina et al. (US 3,607,754) are maintained.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 39-44, 46, 47, and 50-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (US 4,560,737) in view of Chou et al. (US 2003/0054716A1) and Asahina et al. (US 3,607,754).

With respect to claim 39, the recitation “an electret coated along the porous profile” is interpreted as any reference disclosing electret coating composition as claimed that is applied to a porous substrate will read on “electret coated along the porous profile”. Claims 42-44, 46, and 49 recite “or less”, thus it is the examiner’s position that said recitation also includes zero as the lower limit, therefore any reference that does not disclose the amount of HFP (claim 42), CTFE (claim 43), TFE (claim 44), third monomer (claim 46), and second polymer (claim 49) will also read on the said claims.

Yamamoto teaches a piezoelectric polymeric material in the form of a sheet or film, which comprises polymers of vinylidene fluoride (VDF) as a principle component. The piezoelectric sheet or film of Yamamoto is formed into an electret (abstract). Further, the piezoelectric polymeric sheet or film of Yamamoto comprises copolymers of VDF and chlorotrifluoroethylene (CTFE) (column 2, lines 20-21), which reads on an electret having a first polymer copolymerizing from monomers having VdF as a first monomer and HFP, CTFE, TFE,

or combinations thereof as a second monomer as claimed in claim 39. Further Yamamoto teaches a spreading (coating) of a solution of copolymer (A) and vinylidene fluoride base resin on the substrate at column 4, lines 21-22.

Yamamoto is silent as to teaching of a porous substrate, an electret is coated on the porous substrate along the profile thereof, and a third monomer comprising cyclohexyl vinyl ether...methyl methacrylate...or combinations thereof as claimed. However, Chou teaches a method of making an electret that includes coating a porous substrate (abstract). Further Chou discloses a substrate formed of nonwoven fibrous web, which includes fibers selected from polyolefin, polystyrene etc. (0021). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the nonwoven porous substrate of Chou in the invention of Yamamoto as a porous substrate because Chou provides necessary details to practice the invention of Yamamoto.

Yamamoto as modified by Chou is silent as to teaching third monomer comprising cyclohexyl vinyl ether...methyl methacrylate...or combinations thereof as claimed. However, Asahina discloses an electret comprising a resin mixture of vinylidene fluoride resin and methyl methacrylate (abstract) wherein the resin mixture is polymerized (see claim 1). Further Asahina discloses that vinylidene fluoride resin is particularly interesting as a material for producing electret (column 1, lines 10-12) however the electret prepared by using vinylidene fluoride resin does not always sufficiently maintain electric charges (column 1, lines 27-29). Further, a principal object of the Asahina's invention is to provide an improved electret and a process of producing an electret having a high surface charge density and excellent maintenance of electric charges (column 1 lines 30-33). It is noted that the primary reference of Yamamoto discloses

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use of vinylidene fluoride resin in electret formation. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to add the methyl methacrylate of Asahina in the invention of Yamamoto, motivated by the desire to provide an electret having a high surface charge density and excellent maintenance of electric charges.

With respect to claims 41 and 43, Example 1 of Yamamoto discloses 250 g of VDF monomer and 151 g of CTFE monomer that is subjected to polymerization. The chemical formulas of VDF and CTFE are  $C_2H_2F_2$  and  $CF_2=CFCl$  respectively. The molecular weight of VDF and CTFE are 64 g/mol and 116.47 g/mol respectively. Thus, the mole% of VDF in the mixture of VDF and CTFE is about 75 mole% and the mole% of CTFE in the mixture is about 25 mole%, which meets the claim limitations of claims 41 and 43 respectively. Regarding claims 42 and 44, Yamamoto is silent as to teaching of the content of HFP and TFE, which meets the claim limitation of claims 42 and 44. As to the content of the third monomer in the first polymer of approximately 30 mole% or less as claimed in claim 46. It is noted that Asahina is silent as to teaching of the mole% of methyl methacrylate, thus it reads on the content of the third monomer in the first polymer is approximately 30 mole% or less as claimed in claim 46. Regarding claim 47, although Yamamoto does not explicitly teach the content of fluorine element in the first polymer is between 60 and 78 wt%, it is examiner's position that as applied to claim 39, the teachings of Yamamoto as modified by Chou and Asahina either explicitly or implicitly teaches the content of the fluorine element in the first polymer to be between 60 and 76 wt%. Because, Yamamoto teaches the same composition (an electret having a first polymer copolymerized from VDF as a first monomer and CTFE as a second monomer, and a third monomer such as methyl methacrylate) as claimed by the applicant. Thus, it is not seen that the

copolymer of VDF and CTFE as taught by Yamamoto would not have the content of the fluorine element from 60 and 76 wt% as claimed.

With respect to claim 50, Yamamoto teaches in case of dissolving method, the copolymer (A) and the vinylidene fluoride base resin are put into a suitable polar solvent such as dimethylformamide (column 4, lines 17-20). Regarding claims 51 and 52, Yamamoto as modified by Chou teaches claimed invention except the initial surface potential of the electret as claimed in claim 51 and a surface potential of electret as claimed in claim 52. However, it is reasonable to presume that the piezoelectric sheet or film of Yamamoto as modified by Chou necessarily has the claimed initial surface potential as claimed in claim 51 and a surface potential as claimed in claim 52 because like material has like property. The electret composite of applicant comprises a porous substrate and an electret coated on the porous substrate wherein the electret has a first polymer copolymerized from VdF as a first monomer and HFP, CTFE, TFE, or combinations thereof as a second monomer. Further, the electret of the applicant is polarized by corona discharge. The piezoelectric sheet or film of Yamamoto as modified by Chou as applied to claim 39 also comprises a porous substrate with a piezoelectric sheet wherein the piezoelectric sheet comprises a copolymer of VDF and CTFE. Thus, the initial surface potential as claimed in claim 51 and a surface potential as claimed in claim 52 would have been present. Note that reliance upon inherency is not improper even though rejection is based on Section 103 instead of Section 102.

*In re Skoner*, et al. (CCPA) 186 USPQ 80.

8. Claims 48 and 49 are rejected under 35 U.S.C. 103(a) as obvious over Yamamoto et al. (US 4,560,737) in view of Chou et al. (US 2003/0054716A1) and Asahina et al. (US 3,607,754) as applied to claim 39 above, and further in view of Allen et al. (US 5,610,455).

The invention of Yamamoto as modified by Chou and Asahina is previously disclosed. Yamamoto is silent as to teaching the second polymer mixed with the first polymer as claimed in claim 48 and the content of the second polymer in the second polymer in the electret is approximately 60 wt% or less. However, Allen discloses an electret comprising syndiotactic vinyl aromatic polymer, for example syndiotactic polystyrene. These electrets have good charge retention at elevated temperature (abstract). Further Allen disclose that preferably the syndiotactic vinyl aromatic polymer comprises at least 30% by weight of the composition based on the total polymers in the blend. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to add the syndiotactic polystyrene in the piezoelectric polymeric material of Yamamoto, motivated by the desire to provide electrets having good charge retention at elevated temperature.

#### ***Response to Arguments***

9. Applicant's arguments filed 10/31/07 have been fully considered but they are not persuasive.

It is noted that Applicant has incorporated claim 45 into claim 39. Therefore, claim 39 is now claim 45.

Applicant argues that none of the cited references discloses “an electret having a first polymer copolymerizing from monomers having vinylidene fluoride as a first monomer, hexafluoropropylene (HFP)...as a second monomer, and a third monomer comprising



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cyclohexyl vinyl ether...methyl methacrylate...or a combination thereof" as claimed. It is noted that Applicant asserts that '754 patent (Asahina) fails to teach or suggests that **vinylidene fluoride resin and the methyl methacrylate resin are copolymerized**. The Examiner respectfully disagrees. Note that the primary reference of Yamamoto discloses a piezoelectric polymeric material comprising polymers of vinylidene fluoride (VDF) as a principal component (abstract). The VDF base resin of Yamamoto may be either a homopolymer of VDF or a copolymer of VDF with another kind of monomer or a plurality of different kinds of monomers. As VDF copolymer, Yamamoto discloses a copolymer containing VDF and chlorotrifluoroethylene (CTFE) (column 2, lines 20-21). The primary reference of Yamamoto does not teach the third monomer as claimed in claim 39. However, '754 patent discloses an electret comprising a resin mixture of vinylidene fluoride resin and methyl methacrylate (abstract) wherein the **resin mixture is polymerized** (see claim 1). The fact that the mixture containing vinylidene fluoride and methyl methacrylate is polymerized reads on "vinylidene fluoride resin and the methyl methacrylate resin are copolymerized". Further, '754 patent discloses that vinylidene fluoride resin is particularly interesting as a material for producing electret (column 1, lines 10-12) however the electret prepared by using vinylidene fluoride resin does not always sufficiently maintain electric charges (column 1, lines 27-29). Further, a principal object of '754 patent is to provide an improved electret and a process of producing an electret having a high surface charge density and excellent maintenance of electric charges (column 1 lines 30-33). It is noted that the primary reference of Yamamoto discloses use of vinylidene fluoride resin in electret formation. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to add the methyl methacrylate

of '754 patent in the invention of Yamamoto, motivated by the desire to provide an electret having a high surface charge density and excellent maintenance of electric charges.

Applicant argues that the column 1 lines 10-12 and 27-29 of '754 patent as cited by the Examiner merely states that the electret prepared by using vinylidene fluoride does not always sufficiently maintain electric charges. Applicant asserts that merely noting a deficiency of a prior solution or teaching is not the same as disclosing the solution to that deficiency. The Examiner respectfully disagrees because at column 30-33, '754 patent discloses "Thus, a principal object of the present invention is to provide an improved electret and a process for producing an electret having a high surface charge density and excellent maintenance of electric charges."

Applicant argues that the alleged rationale for combining the two references (i.e. motivated by the desire to provide an electret having a high surface charge density and excellent maintenance of electric charges) embodies clear hindsight rationale. The Examiner respectfully disagrees because the motivation to combine the two references is clearly provided in '754 patent at column 1 lines 30-33 which states "Thus, a principal object of the present invention is to provide an improved electret and a process for producing an electret having a high surface charge density and excellent maintenance of electric charges." The Examiner respectfully submits that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F. 2d 1392, 170 USPQ 209 (CCPA 1971). Since nothing was relied on that

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could be gleaned only from the applicant's disclosure. That is what is required for improper hindsight. Accordingly, Applicant's arguments are not found persuasive.

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***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANISH DESAI whose telephone number is (571)272-6467. The examiner can normally be reached on Monday-Friday, 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 571-272-1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. D./

Examiner, Art Unit 1794

APD

/Terrel Morris/

Terrel Morris

Supervisory Patent Examiner

Group Art Unit 1794